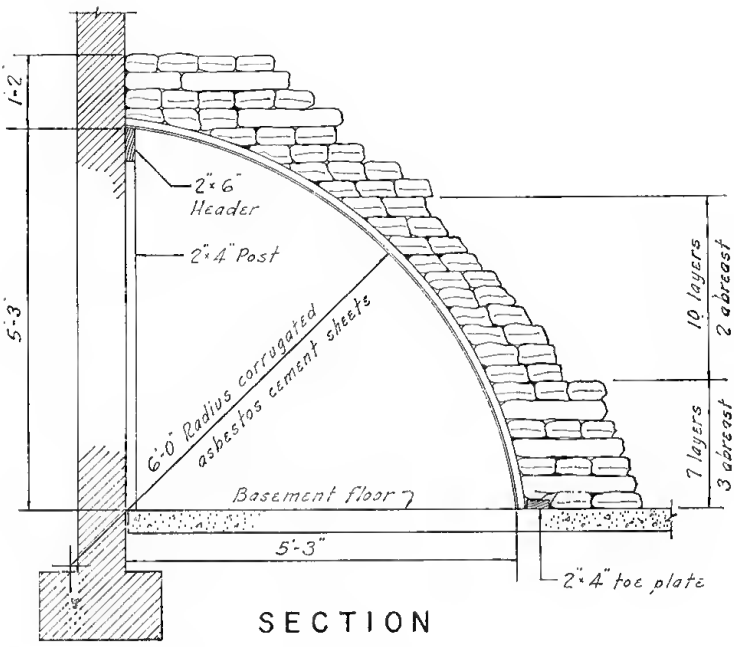
Basement Corrugated Asbestos-Cement Lean-To Shelter

GENERAL INFORMATION

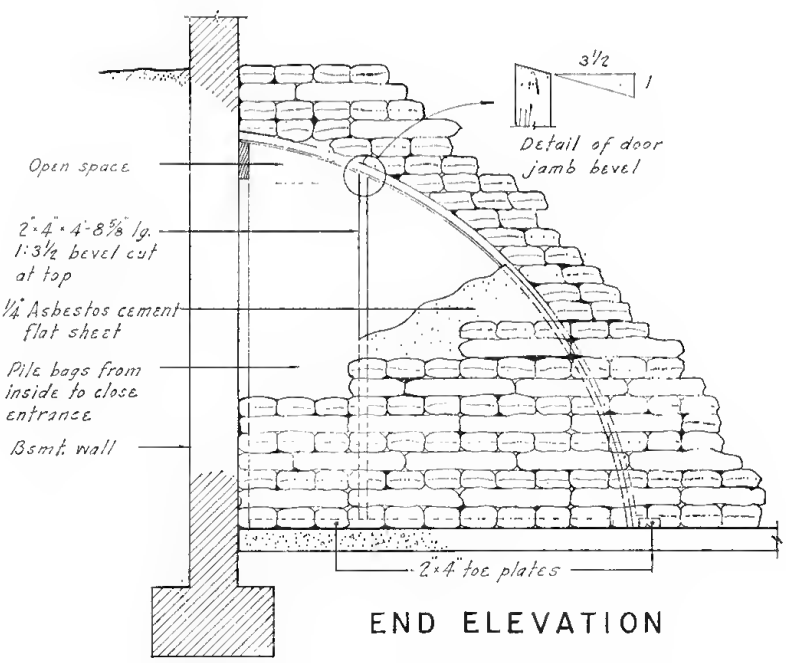
This shelter is designed to provide low-cost protection from the effects of radioactive fallout. It is intended to be installed belowgrade in a basement area. Its principal advantages are availability of low-cost materials, adaptability to the dimensions of most basements, ease of construction, and it can be disassembled readily.

TECHNICAL SUMMARY

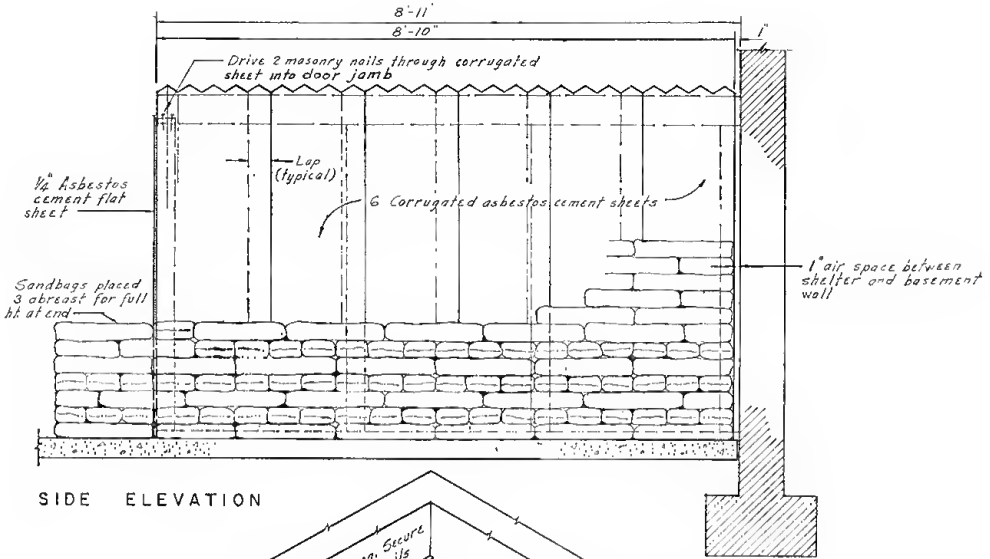
Space and Occupancy.—The lean-to shelter interior has over 40 square feet of area and over 120 cubic feet of space and will house three persons. Its length may be extended by adding sections.
Availability and Cost of Materials.—Materials may be purchased from building materials retailers. Many of these have this shelter in kit



SECTION



END ELEVATION



form at a price of about $125. The entire kit is transportable in an average-sized station wagon and can be carried through standard-sized doorways, hallways, and window openings.

Fallout Protection Factor.—The shelter is designed to provide a protection factor of at least 100 in most residences.

Blast Protection.—Although this shelter was designed primarily to provide fallout protection, it would also provide some protection from flying debris associated with blast.

Ventilation.—Natural ventilation is obtained by omitting two sandbags from the top of the entranceway closure and by leaving a 1-inch airgap along the rear wall. (See Construction Sequence, steps 2 and 12.)

Construction Time.—Total construction time is approximately 18 man-hours: 2 hours for construction of the shell and 16 hours for filling and stacking the sandbags.

Structural Life Expectancy.—The range is from 10 to 20 years, depending on the level of humidity in the basement.

CONSTRUCTION SEQUENCE

1. Brush-coat all surfaces of lumber with water-repellent solution; double brush-coat all cut edges.
2. Nail the 2″ x 6″ header and the 2″ x 4″ end-posts in place with masonry nails. Leave 1″ airspace for ventilation between end of shelter and basement wall.
3. Mark off header into equal distances and nail centerposts in place.
4. Place curved corrugated asbestos-cement sheets in place with one corrugation overlapping. Rest top of curved sheets on the 2″ x 6″ header.
5. Place 2″ x 4″ toeplate firmly against bottom edge of curved corrugated sheets. Nail toeplate to concrete floor with masonry nails.
6. Nail end toeplate in place.
7. Put the 2″ x 4″ doorjamb in place with the 1:3½ bevel on the top end against the curved corrugated sheet. Drive two masonry nails through the corrugated sheet into the doorjamb.
8. Nail precut asbestos-cement flat sheet to doorjamb and toeplate—making sure flat sheet has solid bearing against curved corrugated sheet as well as doorjamb and toeplate.
9. Fill each sandbag with about 30 pounds of sand and tie securely with wire ties.
10. Stack sandbags three abreast in lowest seven layers around the entire length and entrance end of the shelter with every other layer perpendicular to the corrugated sheets. Start at the end of the shelter where the 1-inch airspace occurs and stagger the bags so that all joints are broken, as in brick wall construction. Partly filled bags will be required to form corners and ends.
11. Continue to stack the bags for the next 10 layers along the length and the end of the shelter, leaving the entranceway open. Bags should be placed two abreast and joints staggered. Enough bags should be laid on top of the shelter to provide 14-inch depth.
12. The remaining bags of sand are placed inside the shelter to be stacked in the entranceway for emergency closure. Omit two bags at the entranceway top for ventilation during shelter use.

BILL OF MATERIALS

(To shelter 3 persons)

Item	*Quantity*
2″ x 4″ x 58¼″ construction grade fir or equal	5 pieces.
2″ x 6″ x 8′11″ construction grade fir or equal	1 piece.
2″ x 4″ x 8′11″ construction grade fir or equal	1 piece.
2″ x 4″ x 56⅝″ construction grade fir or equal (1:3½ bevel on one end).	1 piece.
Water repellent (5 percent pentachlorophenol or equal), toxic to wood-destroying fungi and insects.	1 quart.
3″ spiral-type tempered masonry nails	¾ pound.
43½″ x 59½″ x ¼″ asbestos-cement sheet, cut to 6′ radius	1 piece.
Corrugated sheets, asbestos-cement, curved (6′ radius) 21″ wide x 96″ long.	6 sheets.
9″ x 23″ x 0.004″ polyethylene sandbags with wire ties	650.
Dry sand	10 tons.